Criteria for Testing for Diabetes in Asymptomatic, Undiagnosed Individuals

Testing for diabetes should be considered for all individuals age 45 and older, particularly in those with a BMI ≥ 25kg/m^2, and, if normal, should be repeated at 3-year intervals. Testing should be considered at a younger age, or be carried out more frequently, in individuals who are overweight (BMI ≥ 25kg/m^2)* and have additional risk factors:

- are habitually physically inactive
- have a first-degree relative with diabetes
- are members of a high-risk ethnic population (African-American, Hispanic, Native American, Asian-American, Pacific Islander)
- have delivered a baby weighing > 9 lbs. or were diagnosed with Gestational Diabetes Mellitus
- are hypertensive (≥ 140/90 mmHg)
- have an HDL cholesterol level ≤ 35 mg/dl and/or a triglyceride level ≥ 250 mg/dl
- have polycystic ovary syndrome (PCOS)
- had Impaired Glucose Tolerance (IGT) or Impaired Fasting Glucose (IFG) on previous testing
- have other conditions associated with insulin resistance (acanthosis nigracans)

* May not be applicable for all ethnic groups

The Fasting Plasma Glucose (FPG) is the preferred diagnostic test due to its ease of administration, convenience, acceptability to patients, and lower cost.

Source: American Diabetes Association (Position Statement). Screening for Type 2 Diabetes. Diabetes Care 26 (Supplement 1): S21-S24, 2003.

Diagnostic Criteria for Diabetes

An FPG value ≥ 126 mg/dl (confirmed by testing on two different occasions) is diagnostic for diabetes. If the FPG is < 126 and there is a high suspicion of diabetes, the OGTT may be performed. These criteria are for diagnosis and are not treatment criteria or goals.
The hemoglobin A1c (A1C) is not recommended for diagnosis at this time.

Criteria for the Diagnosis of Diabetes

	Fasting Plasma Glucose (FPG)[1] (preferred)	Casual Plasma Glucose[2]	Oral Glucose Tolerance Test (OGTT)[3]
Diabetes Mellitus	FPG ≥ 126 mg/dl (7.0 mmol/l)	Casual plasma glucose ≥ 200 mg/dl (11.1 mmol/l)[4] plus symptoms of diabetes	Two-hour plasma glucose (2hPG) ≥ 200 mg/dl
Prediabetes (Impaired Glucose Homeostasis)	Impaired Fasting Glucose (IFG) FPG ≥ 110 and < 126 mg/dl		Impaired Glucose Tolerance (ITG) 2hPG ≥ 140 and < 200 mg/dl
Normal	FPG < 110 mg/dl		2hPG < 140 mg/dl

[1] The FPG is the preferred test for diagnosis, but any one of the three listed is acceptable. Fasting is defined as no caloric intake for at least 8 hours.
[2] Casual is defined as any time of day without regard to time since last meal. Symptoms are the classic ones of polyuria, polydipsia, and unexplained weight loss.
[3] OGTT should be performed using a glucose load containing the equivalent of 75 g anhydrous glucose dissolved in water. The OGTT is not recommended for routine clinical use, but may be necessary when evaluating patients with IFG or when diabetes is still suspected despite an FPG < 126.
[4] If casual plasma glucose ≥ 160 mg/dl, a fasting plasma glucose is required to rule out diabetes.

Sources:
American Diabetes Association (Committee Report). Report of the Expert Committee on the Diagnosis and Classification of Diabetes Mellitus. Diabetes Care 26 (Supplement 1): S5-S20, 2003.

American Diabetes Association (Position Statement). Standards of Medical Care for Patients with Diabetes Mellitus. Diabetes Care 26 (Supplement 1): S33-S50, 2003.

(continued on reverse)

Classification of Diabetes

Type 1

Type 1 diabetes most often results from a cellular mediated autoimmune destruction of the beta cells of the pancreas. Patients with this form of diabetes are dependent upon insulin for survival and are at risk for ketoacidosis. Type 1 commonly occurs in childhood and adolescence but may occur at any age.

Type 2

Individuals with type 2 diabetes have insulin resistance and relative, rather than absolute, insulin deficiency. Primary treatment centers on weight loss, improved nutrition, and increased age-appropriate physical activity. Oral agents may become necessary if the initial treatment is unsuccessful. These patients do not need insulin to survive but may require insulin over time for optimal management, especially if oral agents become ineffective. Type 2 diabetes commonly goes undiagnosed for years because it is often asymptomatic in its early stages. Individuals with undiagnosed type 2 diabetes are at increased risk for developing macro- and microvascular complications.

IFG and IGT

Impaired Fasting Glucose (IFG) has been defined as a fasting plasma glucose of ≥ 110 mg/dl but < 126 mg/dl. Impaired Glucose Tolerance (IGT) is defined as a 2-hour oral glucose tolerance test value of ≥ 140 mg/dl, but < 200 mg/dl. Both IFG and IGT have been categorized as prediabetes and are risk factors for future diabetes and cardiovascular disease. Recent studies have shown that modest weight loss and regular physical activity can reduce the rate of progression of IGT to type 2 diabetes.

GDM

Gestational Diabetes Mellitus (GDM) is defined as any degree of glucose intolerance with onset or first recognition during pregnancy. The definition applies regardless of whether insulin or only dietary modification is used for treatment. GDM complicates approximately 4% of all pregnancies in the U.S.; however, the prevalence is higher among some minority groups. Six weeks or more after the pregnancy ends, a woman with GDM should be tested to rule out type 1 or 2 diabetes or IFG/IGT. Women with GDM have a higher risk for type 2 diabetes later in life.

Sources:
American Diabetes Association (Committee Report). Report of the Expert Committee on the Diagnosis and Classification of Diabetes Mellitus. Diabetes Care 26 (Supplement 1): S5-S20, 2003.

Diabetes Prevention Program Research Group. Reduction in the Incidence of Type 2 Diabetes with Lifestyle Intervention or Metformin. NEJM 346 (6): 393-403, 2002.

Goals for Glycemic Control

	Normal	Goal
Preprandial plasma glucose Before Bedtime	< 110 mg/dl	90-130 mg/dl
Peak postprandial plasma glucose (1 to 2 hours after start of meal)	< 120 mg/dl	< 180 mg/dl
Hemoglobin A1C	< 6%	< 7%

Points to remember when setting glycemic goals

- Individualize goals.
- Target postprandial glucose if A1C values are not optimal and preprandial glucose goals are met.
- More intensive glycemic goals may reduce microvascular complications yet increase hypoglycemic episodes.
- Patients with frequent or severe hypoglycemia may require less intensive glycemic goals.
- Children, pregnant women, and elderly individuals require special considerations when setting glycemic goals.

Source: American Diabetes Association (Position Statement). Standards of Medical Care for Patients with Diabetes Mellitus. Diabetes Care 26 (Supplement 1): S33-S50, 2003.